

StatCalc User Manual

Version 8 for Mac and Windows



© Copyright 2015, AcaStat Software.
All rights Reserved.
<http://www.acastat.com>



Table of Contents

Introduction	4
Getting Help	4
Uninstalling StatCalc.....	4
StatCalc Startup Screen	4
Example Data	4
Entering Data	4
Copy Data	4
Paste Data	5
Export Data	5
Import Data	5
Data Manager Module	6
Compatible Data File	6
Stat Guide.....	7
Statistical Tools	8
Frequencies	8
Descriptives	8
Weighted Mean	9
Z-Score	9
Confidence Interval for the Mean	9
Confidence Interval for the Proportion	9
Diagnostic Accuracy	9
Goodness of Fit	9
Chi-Square	10
Z-test One Sample	10
Z-test Two Sample.....	10
T-test One Sample.....	10
T-test Two Sample.....	10
One-Way ANOVA	10
Correlation	11
OLS Regression	11
Logistic Regression	11
Z Distribution.....	11
T Distribution.....	11
F Distribution.....	11
Chi Square Distribution	12
Decision Tools.....	13
Decision Tables.....	13
Queuing Theory.....	13
Constant Dollars.....	14
Price Elasticity of Demand.....	14
Output Viewer	15
File Menu	15
<i>New</i>	<i>15</i>
<i>Open Output.....</i>	<i>15</i>

<i>Save Output As</i>	16
<i>Print Output</i>	16
Edit Menu.....	16
<i>Cut</i>	16
<i>Copy</i>	16
<i>Paste</i>	16
<i>Clear</i>	16
<i>Select All</i>	16
System Requirements (required minimum)	17

Introduction

StatCalc provides students, teachers, researchers, and managers with an easy to use data analysis tool. StatCalc includes 21 statistics modules, four decision tools, an output log, a statistics glossary, and an output interpretation guide for each module.

Getting Help

Application help can be found in this manual and in the Help module provided with StatCalc. In addition to application help, statistical help is provided in a glossary of statistical terms and definitions.

Uninstalling StatCalc

For Mac versions, drag the program file to the Trash Bin. For Windows versions, use the Windows Control Panel option ADD/REMOVE programs to uninstall StatCalc.

StatCalc Startup Screen

StatCalc starts by displaying the Statistical Tools module. There are also tabs for the Decision Tools modules and Output Viewer. Use the Statistical Tools module to select and run statistical analyses. The Output Viewer tab stores all analyses conducted after opening StatCalc. The output from all procedures, including the Decision Tools module, is automatically appended to the output log.

Example Data

StatCalc includes example data for each statistical and decision tool module. Click the Example Data toolbar button to load data into the fields for the selected statistical procedure.

Entering Data

To enter data, point and click on a cell and begin typing. Pressing the right, left, up, or down arrow key will save the entry and move the data entry point to the next cell. Pressing the Enter (Return) key will move the data entry point to the next row.

Copy Data

To copy data from a StatCalc table, select the Copy button on the toolbar. The copy procedure is available for the following statistical procedures: Frequencies, Descriptives, Weighted means, Goodness of fit, Correlation, OLS regression, and Logistic regression procedures.

Paste Data

To paste data from a spreadsheet, select and copy the data (make sure the top row has the variable names). In the Statistical Tools tab, select the Paste button on the toolbar. The paste procedure replaces all data in the current procedure. When pasting compatible data copied from other software, the data will load from the first (left) column up to the number of columns allowed in a procedure. As an example, Descriptives allows only the far left column while OLS regression allows up to eleven columns of data.

This option is available for the following statistical procedures: Frequencies, Descriptives, Weighted means, Goodness of fit, Correlation, OLS regression, and Logistic regression procedures.

Export Data

Use the File menu to export data into tab or comma delimited text files. The Export procedure is available for the following statistical procedures: Frequencies, Descriptives, Weighted means, Goodness of fit, Correlation, OLS regression, and Logistic regression procedures.

Import Data

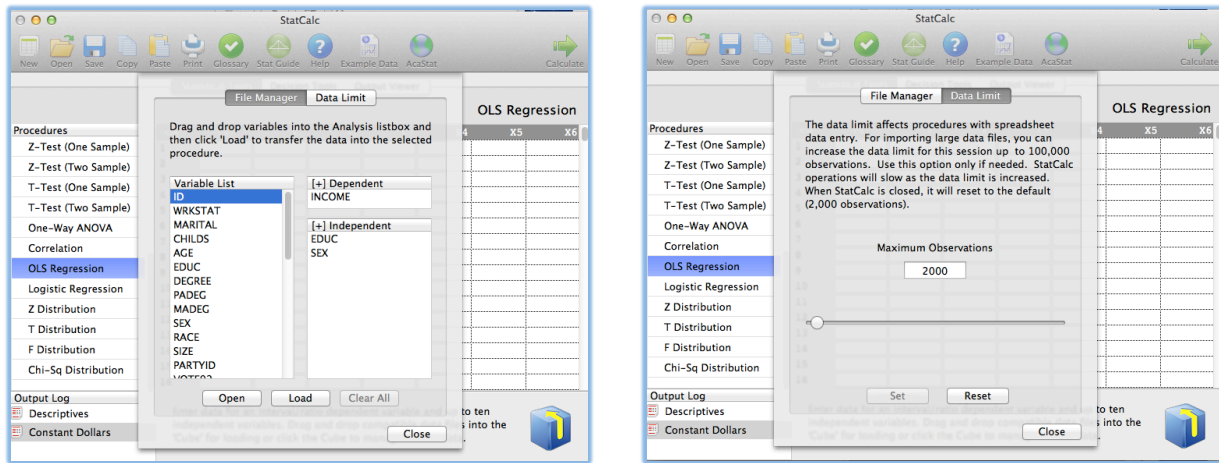
StatCalc is able to import AcaStat data files and tab and comma delimited text files. Create or export delimited text files from most software packages to include word processors, spreadsheets, databases, and statistical packages. StatCalc allows up to 100,000 observations.

There are four ways to import compatible data files for use in Frequencies, Descriptives, Weighted means, Goodness of fit, Correlation, OLS regression, and Logistic regression procedures:

1. *Paste*: Select and copy compatible data in spreadsheet software, select one of the above procedures and click paste.
2. *Import File Menu*: Use the File menu to open a compatible file. Once the file is selected, the Data Manager module will appear with a list of variables available for loading into the selected procedure.
3. *Data Cube*: Click the data cube to display the Data Manager module for selecting and opening a compatible data file. The data cube is only enabled when one of the above compatible statistical procedures is selected.
4. *Drag and Drop*: Drag and drop a compatible data file or data selected in a spreadsheet into the Statistical Procedures tab to immediately load data or drag and drop a compatible data file into the data cube. As with pasting, the data will load from the first (left) column up to the number of columns allowed in a procedure. As an example, Descriptives allows only the far left column while OLS regression allows up to eleven columns of data.

Data Manager Module

The Data Manager module contains two tabs: File Manager and Data Limit.



File Manager Tab: This tab allows the selection and opening of compatible data files. Variable names from the first row of file will be displayed. Drag and drop these variables into the available analysis list boxes. The list box format will change depending on the statistical procedure selected. As an example, in the image above the OLS Regression procedure is selected so the Data Manager will allow one Dependent variable and up to ten independent variables to be selected. Click “Load” to populate the data grid in the OLS Regression procedure. Data Manager will automatically close to display the statistical procedure. The imported data will be available for all compatible statistical procedures until the file is cleared from memory.

Data Limit Tab: The Data Limit tab affects procedures that allow spreadsheet-like data entry. **Before importing** large data files, the data limit can be temporarily adjusted to accept up to 100,000 observations. Use this option only if needed. StatCalc operations will slow as the data limit is increased. When StatCalc is closed, it will reset to the default (2,000 observations).

Compatible Data File

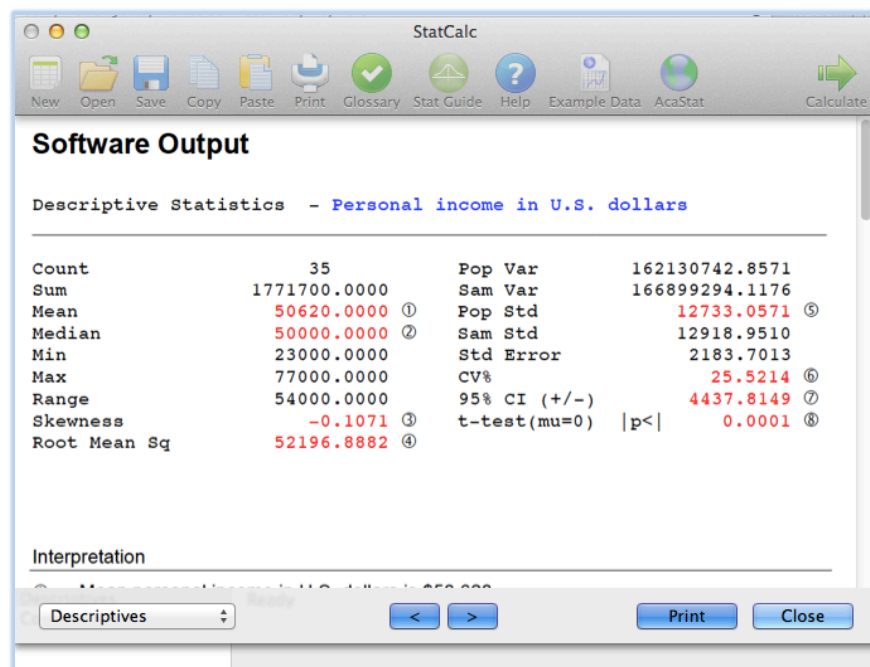
A compatible delimited text file will have variable names in the first row. Each variable name must be separated by a tab or comma. The data must start in the second row. Each row represents one observation with one or more variables. StatCalc comes with example data for the regression modules that provides an example of the formatting required. The delimited text file should be saved as a text file with either a '.txt' file extension for tab delimited files and a '.csv' extension for comma delimited files. Countries that use comma decimal delimiters should use tab delimited instead of csv to import or export data. Do not use rich text format (rtf) or any other software specific format such as Microsoft Word or Excel or Apple Numbers or Pages.

Below is an example of a comma separated text file. For another example, you can also copy example data from StatCalc and paste it into a spreadsheet or word processor.

```
IDNum,Name,Age,Sex,Income
1001,Fred,49,m,56000
1002,Susan,32,f,64000
1003,Jill,69,f,32000
```

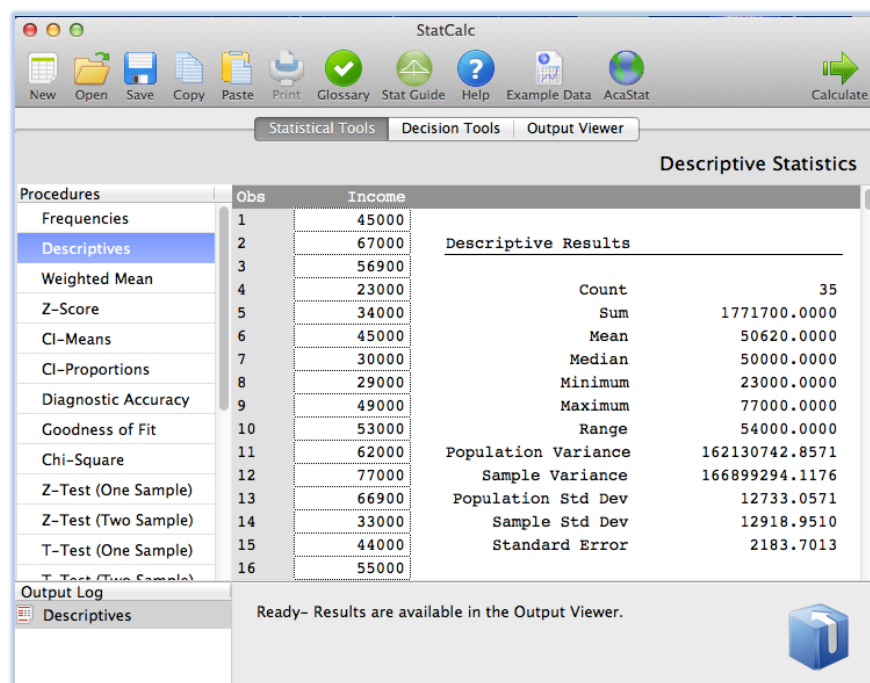
Stat Guide

Each module has an annotated example of the output to assist with interpretation. The annotated guide is based on the example data provided for each module. Click the Stat Guide toolbar button to load the annotated output example.



Statistical Tools

The Statistical Tools tab provides 21 statistical tools.



Frequencies

Produces a listing of all the values in a variable, the number of times they occur in the variable, and the percent of cases represented in each value. Frequencies can be produced on numerical and string data. A 'Pareto Sort' is also provided that lists categories in rank order from the most frequently occurring category to the least.

Descriptives

Calculates measures of central tendency (mean, median) and variation (variance, standard deviation). The Descriptives module requires continuous data. Enter the data and click calculate when done.

Weighted Mean

Calculates the mean for a group of means. For each mean, enter the mean and its sample size. Click calculate when done. The output includes the mean if the group of means had not been weighted by the sample size. This value is for comparison purposes only. Do not use the unweighted mean.

Z-Score

Calculates the standardized score for a specific value in a distribution represented by a mean and standard deviation.

Confidence Interval for the Mean

Calculates the confidence interval for the population mean based on a sample mean, standard deviation, and given sample size. The confidence level is adjustable from 80% to 99%.

Confidence Interval for the Proportion

Calculates the confidence interval for the population proportion based on a sample proportion and given sample size. The confidence level is adjustable from 80% to 99%.

Diagnostic Accuracy

Diagnostic accuracy compares a test result to a dichotomous reference standard. It is used to evaluate the sensitivity and specificity of a diagnostic test. The reference and test variables can only be two values (usually 0 for non-disease and 1 for disease). The reference variable represents the gold standard to compare to the test results.

Goodness of Fit

Use this procedure to evaluate the variation in a distribution of categories. Each row in the table represents one category among several. For each category, enter the observed count and the expected count. Generally the expected count is established by estimating a priori the proportional distribution of the categories. The expected frequency for each category can be obtained by multiplying the total observed sample size by the a priori (expected) proportion for each category. StatCalc calculates the standardized residual for each category. A residual of ± 2.0 or greater suggests that category had a substantive impact on the chi-square test statistic.

Chi-Square

This procedure presents the association between two categorical variables via a contingency table. Each cell in a contingency table represents a subgroup. All the rows and columns provided by StatCalc do not need to be used but always start with the top leftmost cell. Enter counts in each cell and StatCalc will calculate for each cell the row percent, column percent, and total percent.

This procedure also automatically produces several contingency table statistics to include the chi-square statistic and measures of strength of association. StatCalc chi-square allows for a contingency table with up to six rows and six columns.

Z-test One Sample

Used to test for the difference between one population proportion and one sample proportion. Enter the population proportion, sample proportion, and the number of observations in the sample.

Z-test Two Sample

Used to test for the difference between two sample proportions. For two sample z-tests, both dependent and independent variables must be nominal level variables.

T-test One Sample

Used to test for the difference between one population mean (μ) and one sample mean. Enter the population mean, sample mean, sample (or population) standard deviation and the number of observations in the sample.

T-test Two Sample

Used to test for the difference between two sample means. For t-tests, the dependent variable must be an interval/ratio level variable to produce the means for analysis. The independent variable must be a nominal or ordinal level variable (often it will be a dichotomous variable such as sex: 1=male, 2=female).

One-Way ANOVA

Used to test for the difference between two or more sample means. The dependent variable must be an interval/ratio level variable to produce the means for analysis. The independent variable must be a nominal level variable (e.g., race: 1=white, 2=black, 3=Asian, 4=Hispanic) or ordinal (e.g., political ideology: 1=conservative, 2= moderate, 3=liberal). All the rows and columns provided do not have to be used but always start with the top leftmost cell. StatCalc ANOVA allows for up to six categories of sample means.

Correlation

Calculates the Pearson correlation coefficient to represent the association between two interval/ratio level variables. Enter the data as indicated and click Calculate when done.

OLS Regression

Calculates simple regression (one independent variable) or multiple regression (two or more independent variables). OLS regression requires an interval/ratio dependent variable. StatCalc OLS allows one dependent variable and up to ten independent variables. The dependent variable must be located in the first data column (left side) of the spreadsheet.

Logistic Regression

Calculates simple regression (one independent variable) or multiple regression (two or more independent variables). Logistic regression requires a dichotomous (0 and 1) dependent variable to develop a model that predicts the occurrence of 1. StatCalc logistic allows one dependent variable and up to ten independent variables. The dependent variable must be located in the first data column (left side) of the spreadsheet.

Z Distribution

Enter a z score to calculate the proportion of the probability distribution at or beyond the score entered. This procedure is most useful for evaluating the statistical significance of a z-test statistic calculated manually.

T Distribution

Enter a t score and degrees of freedom to calculate the proportion of the probability distribution at or beyond the score entered. This procedure is most useful for evaluating the statistical significance of a t-test statistic calculated manually.

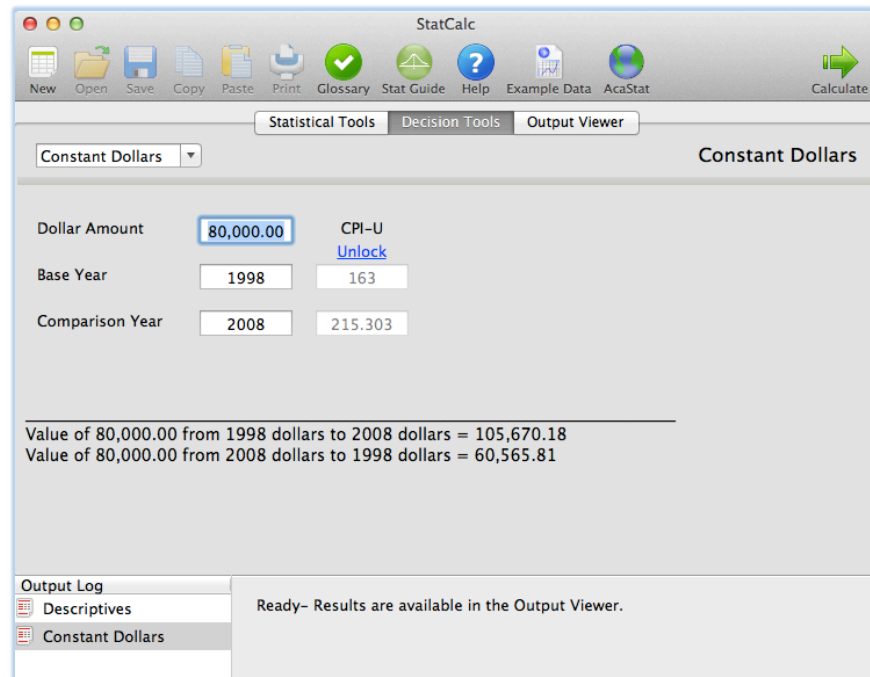
F Distribution

Enter a f ratio score and numerator and denominator degrees of freedom (consult a statistical reference) to calculate the proportion of the probability distribution at or above the score entered. This procedure is most useful for evaluating the statistical significance of an f test statistic calculated manually.

Chi Square Distribution

Enter a chi-square score and degrees of freedom to calculate the proportion of the probability distribution at or above the score entered. This procedure is most useful for evaluating the statistical significance of a chi-square test statistic calculated manually.

Decision Tools



The Decision Tools tab provides four tools for calculating constant dollars and experimenting with decision tables, queuing theory (waiting lines), and price elasticity of demand. An example is provided for each tool. The results are displayed in the Decision Tool tab and are added to the output log. A good reference text for most of these tools is *Fundamentals of Management Science*, by Efraim Turban & Jack R. Meredith.

Decision Tables

Decision tables quantify in table form the impact of decision options under uncertainty. Tables will typically contain the following elements:

1. Alternative courses of action
2. States of nature
3. Probabilities of states of nature (must sum to 1)
4. The payoffs

Queuing Theory

Queuing theory is used to evaluate the performance of service systems where waiting lines may form and customers arrive at random times (i.e., license bureau, tax assessors office, emergency room). To

evaluate a waiting line, data must be provided for the average arrival rate, average service rate, and the number of servicers.

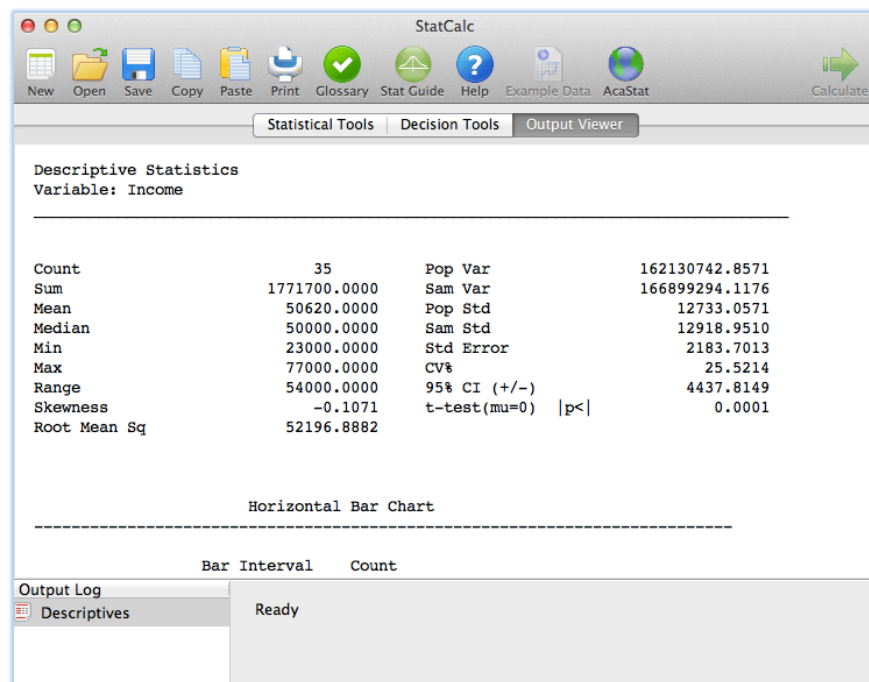
Constant Dollars

This tool uses the urban consumer price index (CPI-U) for the United States to adjust for inflation. The module will create and apply an inflation and deflation estimate. Another price index can be used by overriding the default CPI by entering “*” followed by a CPI.

Price Elasticity of Demand

This tool uses the change in demand that occurs when a price is changed to estimate price elasticity. Given the estimate of elasticity, the tool will attempt to find a breakeven price through iterations of price. Both fixed and variable costs can be included in the model.

Output Viewer



The Output Viewer tab displays the results of the analysis in a text window for editing and printing. Each time a statistical procedure is run, the results are automatically sent to the output log. Notes can be added to the output before printing or saving. The Output Viewer can open output saved by StatCalc and also AcaStat.

The Output Viewer uses Courier font. This is a fixed font that ensures proper alignment of the tables. When copying output to a word processor, the default font may not be Courier in the word processor. This will result in tables that are out of alignment. To correct this, highlight the output in the word processor and change the font to Courier. The font size may also need to be reduced to ensure the output fits widthwise on one page.

File Menu

New

Click the "New" button to erase all output.

Open Output

This menu item reopens saved output into the Output Viewer. It will replace the current Output Viewer contents.

Save Output As

This menu item saves all items in the output log into a text file that can be imported into word processing software.

Print Output

This menu item prints all output or selected items in the output log. To select multiple items in the Mac version, press and hold the Command key while selecting items in the output log. For the Windows version, use the Control key for the same function. By default, StatCalc prints a date and time header and a Notes section on each page printed.

Edit Menu

Cut

Use this menu item to remove selected output text and save the text to the system clipboard.

Copy

Use this menu item to copy selected output text to the system clipboard.

Paste

Use this menu item to paste text from the system clipboard into the output screen.

Clear

Use this menu item to delete all output log entries. The textbox must be selected.

Select All

Selects all the text in the output screen.

System Requirements (required minimum)

Mac OS X 10.7 or later

Windows XP or later. Windows 7 or later is recommended.

support@acastat.com

<http://www.acastat.com>